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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/003,347	12/06/2001	Zeev Smilansky	Q67625	6579

32588 7590 11/28/2003

APPLIED MATERIALS, INC.  
2881 SCOTT BLVD. M/S 2061  
SANTA CLARA, CA 95050

EXAMINER
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BALI, VIKKRAM

ART UNIT	PAPER NUMBER
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2623

DATE MAILED: 11/28/2003

18

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/003,347

Applicant(s)

SMILANSKY ET AL.

Examiner

Vikkram Bali

Art Unit

2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 26-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 26-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

In response to the amendment filed on 8/07/2003, the amendments to the claims have been entered and the action follows:

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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3. Claims 1-4 and 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alumot et al (US 5699447) in view of Tsai et al (US 4845558).

With respect to claim 1, Alumot discloses: method for the analysis of surfaces, particularly for the detection of defects on semiconductor wafers, (see col. 5, lines 16-18, inspecting semiconductor wafers), which comprises checking individual pixels of the surface under control, (see col. 12, lines 1-7, explains the methodology of getting the reference by computing the type of each pixel "individual pixel" and the same methodology is performed during the inspection process, and "under control" is read as the area under investigation or inspection), and detecting suspected pixels by collecting the signature of each pixel, (see col. 5, lines 20-23, the inspection process performs a detection of the defect in the inspected pattern by comparing the image with the reference, and the "signature" is read as the image), defined by the way in which the pixel responds to the light of a scanning beam, (col. 1, lines 15-19, states that the photo detector detects the presence of a particle by collecting the light scattered by the particles i.e. the light scattered is read as "pixel responds to the light scanning beam"), and determining whether said signature has the characteristics of a signature of a faultless or of a pixel that is defective or suspect to be defective, (see col. 5, lines 45-48 and col. 5, lines 56-59, the lines 45-48 detects the high probability of a detective region "suspect to be defective", and lines 56-59, detects the presence or absence of defect "pixel that is defective" or "faultless" as claimed); as claimed. However, Alumot fails to disclose the pixel alone and the without reference to adjacent pixels, for the signature of the pixel. Tsai in the wafer defect detection method teaches a pixel by pixel comparison

for detecting the defects on the wafer, thereby teaching "the pixel alone and the without reference to adjacent pixels, for the signature of the pixel", (see col. 3, lines 42-52, because the pixel to pixel is compared therefore, the signatures on a alone pixel is taken without referencing the adjacent pixels) as claimed.

It would have been obvious to one ordinary skilled in the art at the time of invention to combine the two references because they are analogous, because they are solving the similar problem of wafer inspection. The pixel-by-pixel inspection as taught by the Tsai can be incorporated into the Alumot system, and the motivation of doing thus is to make the comparison more accurate because the smallest element of the picture i.e. pixel, is compared.

With respect to claim 2, Alumot further discloses: analyzing the signature of each pixel to determine the presence of foreign particles, (see col. 1, lines 18-19, the photo detector detects the presence of a particle by collecting the light "signature of each pixel") as claimed.

With respect to claim 3, Alumot further discloses: a pixel signature is defined by an array of signature components, each of which is a signal which corresponds to the intensity of the light scattered by the pixel in a fixed direction, (see col. 5, lines 52-55, the image is converted into a electrical signal "signature components", as the electrical signal is a signal that corresponds to the intensity of the light, because the CCD obtains the image as the light scattered of the wafer) as claimed.

With respect to claim 4, Alumot further discloses: detecting defective or suspect pixels by a method chosen from among the group of comparing the pixel signature to a master signature, comparing parameters of the pixel signature to ranges of acceptable parameters, or determining the position of the pixel signature in a statistics of such signatures, (see col. 2, lines 34-36, for the broad view of the reference, that the comparison is done between the inspected pattern and the reference pattern “comparing the pixel signature to a master signature”, and the description of the procedure is detailed in the col. 8, lines 62-67) as claimed.

Claims 26 and 29 are rejected for the same reasons as set forth for the claims 1 and 3, because claims 26 and 29 are claiming similar subject matter as claims 1 and 3.

With respect to claim 27, Alumot further discloses: a plurality of pixels is illuminated and checked concurrently, (see col. 5, lines 37-42, the plurality of light detectors detect the plurality of reflected light i.e. plurality of pixels is illuminated and the comparison takes place for these pixels, see col. 5, lines 18-21) as claimed.

With respect to claim 28, Alumot further discloses: a defect list, (see figure 27, numerical 128, the classification of the defects) as claimed.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vikkram Bali whose telephone number is 703.305.4510. The examiner can normally be reached on 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on 703.308.6604. The fax phone numbers for the organization where this application or proceeding is assigned are 703.872.9314 for regular communications and 703.872.9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.306.0377.

Vikkram Bali  
Examiner  
Art Unit 2623



vb  
November 21, 2003